

PLANT GROWTH & DEVELOPMENT

1. Which of the following is not correct?
 - (A) Opening of rose bud is autonomic movement of growth.
 - (B) Coiling of tendrils around the support is called Thigmotropic movement.
 - (C) Auxin is responsible for the development of geotropic curvature in root.
 - (D) Movement of pollen tube is chemotactic movement.

2. Which of the following is wrong?
 - (A) Photoperiodism was discovered by Garner and Allard in Tobacco.
 - (B) Pigment Cytochrome is associated with the phenomenon of photoperiodism.
 - (C) Flowering will be inhibited in SDP if night is broken with a brief flash of light.
 - (D) LDP will flower under continuous light throughout day and night.

3. Which of the following is not a function of Auxin?
 - (A) Stoppage of cambial activity
 - (B) Initiation of new roots
 - (C) Inhibition of root growth
 - (D) Production of ethylene

4. Which of the following is not matched correctly?
- | Hormone | – First Isolated from |
|-------------------|-----------------------|
| (A) Auxin | – Human urine |
| (B) Cytokinin | – Coconut water |
| (C) Gibberellin | – Fungus |
| (D) Abscisic acid | – Cotton ball |
5. Richmond Lang effect is associated with –
- | | |
|---------------|-----------------|
| (A) Auxin | (B) Gibberellin |
| (C) Cytokinin | (D) Ethylene |
6. Process of differentiation and morphogenesis in plants is associated with –
- (A) Auxin and Gibberellin
 - (B) Auxin and Cytokinin
 - (C) Gibberellin and Cytokinin
 - (D) Gibberellin and Abscisic acid
7. A block of agar containing a plant hormone is kept on one side of decapitated apex of *Avena* coleoptile. There is development of curvature and bending of stem on the other side. The hormone present in agar block is –
- | | |
|---------|--------|
| (A) IAA | (B) CK |
| (C) ABA | (D) GA |

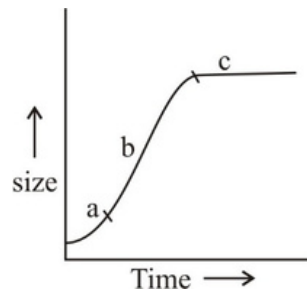
8. Some plants were kept under 15 hours of daylight and 9 hours of night. They started producing flowers. However in some of them night was interrupted by a brief flash of light resulting in failure of flowering to take place. This plant is a – (A) LDP (C) DNP
(B) SDP
(D) Any of these
9. Pruning of a plant results in the development of lateral buds. Spraying a hormone is responsible for same effect. The hormone is –
(A) Auxin (B) Gibberellin
(C) Cytokinin (D) Ethylene
10. Which of the following is not correctly matched?
(A) Ethylene (B) Ripening of fruits
Abscisic acid – (C) Reduction in transpiration
Gibberellin – – Reversal of Dwarfism
(D) Cytokinin Eradication of dicot weeds
11. Which of the following is not an effect of Gibberellin?
(A) Bolting
(B) Inducing dormancy
(C) Promoting parthenocarpy
(D) Substitution of chilling response

12. Hormone responsible for Climacteric effect is —
- (A) Ethylene (B) ABA
(C) Auxin (D) Cytokinin
13. Which of the following is positively photoblastic seed?
- (A) *Allium* (B) Lettuce
(C) Maize (D) Pea
14. Agent orange is —
- (A) A hormone promoting ripening in orange.
(B) A growth regulator promoting development of parthenocarpic fruits.
(C) An agent promoting cell division in tissue culture.
(D) A chemical killing broad leaved dicot plants.
15. Keeping seed in well aerated moist soil at low temperature to promote germination is called —
- (A) Vernalization (B) Scarification
(C) Stratification (D) Dormancy
16. Which of the following is not a SDP?
- (A) Wheat (B) Rice
(C) Spinach (D) Barley

17. Which of the following statement is wrong?

- (A) Phytochrome far red is the active form of phytochrome
- (B) Florigen is the hypothetical plant hormone
- (C) Photoperiodic stimulus is perceived by leaves
- (D) SDP flower under high Pfr condition

18. In the following graph what does the “a” represents?



- (A) Log phase
- (B) Stationary phase
- (C) Lag phase
- (D) Decline phase

19. Bakane disease is associated with the discovery of

- (A) Gibberellin
- (B) Cytokinin
- (C) Ethylene
- (D) Auxin

20. Which of the following group consist of natural hormones?

- (A) IAA and NAA
- (B) IBA and 2, 4 D
- (C) NAA and 2, 4 D
- (D) IBA and IAA

21. The sudden elongation of the internodes just prior to flowering in rosette plants is known as

(A) Abscission (B) Plasticity (C) Bolting (D) Vernalisation

22. If a planter is interested in obtaining a good crop of tea leaves from a single plant, he should

(A) Feed auxin to the plant through soil
(B) Remove the apical bud of the main shoot and the branches
(C) Cut off the tip of the plant and then apply auxins to the cut end
(D) Supply auxin from the tip of the plant as well as through roots

23. Which plant growth hormone is used to treat seeds to remain dormant during storage?

(A) Kinetin
(B) Abscisic acid
(C) Ethylene
(D) Gibberellic acid

24. Match the table

(A) Maheshwari	(I) Pre-sowing treatment of seeds of <i>Phaseolus aureus</i> with IAA
(B) Das	(II) Avena curvature test
(C) Went	(III) Work on seedless fruit in cucumber
(D) Chakravarty	(IV) Successful culture of a ovule of <i>Papaver</i> using IAA and kinetin

	A	B	C	D
(A)	IV	III	II	I
(B)	I	II	III	IV
(C)	II	III	IV	I
(D)	III	I	IV	II

25. Match the following

A'	B'
1. Auxin	(I) Ripening and maturity of fruits
2. Gibberellin	(II) Differentiation of xylem elements
3. Cytokinin	(III) Prevention of genetic and physiological dwarfism
4. Ethylene	(IV) Found from tumour tissue of tobacco

(1) (2) (3) (4)

- (A) IV III II I
- (B) IV II III I
- (C) II III IV I
- (D) III IV II I

26. Which plant is categorized as 'Short Day Plants'?

- (A) Sugarbeet
- (B) Cucumber
- (C) Tomato
- (D) Tobacco

27. Gibberellic acids are used to

- (A) Induce parthenocarpic fruits in tomatoes
- (B) Increase the length of grape stalks
- (C) Promote flowering in litchi
- (D) None of these

28. Apical dominance refers to

- (A) Sudden elongation of the internodes
- (B) Suppression of growth of lateral buds by presence of apical bud
- (C) Shedding of leaves, flowers and fruits due to hormonal imbalance
- (D) Low temperature treatment given to seeds

29. Who isolated auxin from the tips of the coleoptile of oat seedlings?

- (A) F.W. Went
- (B) E. Kurosawa
- (C) Skoog
- (D) Charles Darwin

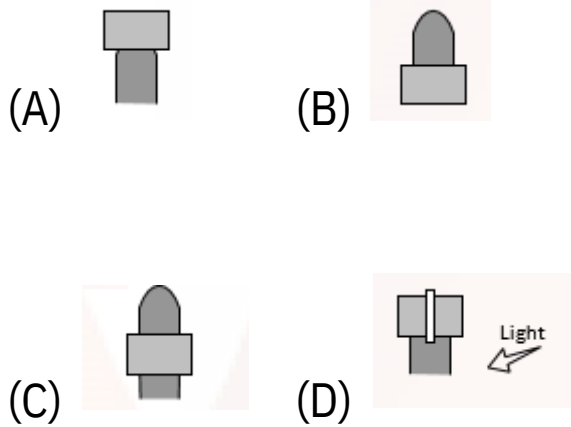
30. Which of the following is the application of cytokinins?

- (A) Initiates rooting in stem cuttings
- (B) Improves the shape of the fruit
- (C) Promote adventitious shoot formation
- (D) Prevent premature fall of leaves, flowers and fruits

31. Choose the correct statement regarding breaking of seed dormancy

- (A) GA3 helps in the adventitious shoot development.
- (B) GA3 enhances photosynthesis process
- (C) GA3 induce cell elongation on shaded side by accumulating on that side .
- (D) GA3 initiates enzyme hydrolases synthesis to digest and mobilise the seed's reserve food materials.

32. Which arrangement of an agar block on an oat coleoptile would result in IAA collecting in the agar



33. Exogenous application of gibberellins induces male flower formation on genetically female plants in

- (A) *Carica* (B) *Cucumis*
 (C) *Coccinia* (D) *Cucurbita*

34. Which of the following plant hormone leads to early seed production?

- (A) Kinetin (B) *GA3* (C) *IAA/X-rays* (D) ABA

35. Went (1928) reported that auxin moves from apical to basal end *i.e.*, basipetally the movement is quite fast, in root is about

- (A) 0 to 1 *cm/h* (B) 0.1 to 0.2 *cm/h*
 (C) 0.2 to 0.3 *cm/h* (D) 0.3 to 0.4 *cm/h*

36. Which phytohormone is synthesized by the tissues of senescing organs?

- (A) Auxin
- (B) Ethylene
- (C) Cytokinin
- (D) Gibberellin

37. Which statement is true about abscisic acid?

- i. Abscisic acid is an antitranspirant.
- ii. Abscisic acid is called stress hormone.
- iii. Abscisic acid leads to early seed production.
- iv. Abscisic acid initiates rooting in stem cuttings.

(A) i. and ii. (B) Only ii. (C) iii. And iv. (D) i. and iv.

38. The relation of flowering to the lengths of light and dark period was investigated by two experiments. In one experiment, the plants were subjected to dark periods of various lengths while the light periods were kept at 4 hours. In the second experiment, plants were kept in dark periods of various lengths while the light periods were kept at 16 hours. The number of flowers formed in relation to these periods is shown in the table

Dark periods hours	flowers formed in experimental light periods 4 hours	
		16 hours
8	0	0
10	0	0
12	4	6
14	5	7
16	5	8

These results indicate that flowering

- (A) Requires long days
- (B) Is initiated by a long light period
- (C) Is due to short light periods
- (D) Requires a minimum dark period

39. In which plant regions natural cytokinins are synthesised?

- (A) Root apices
- (B) Shoot buds
- (C) Young fruits
- (D) All of these

40. Which process is accompanied by the changes in the structure, shape and chemistry of totipotent embryonic cells to suit the function they perform?

- (A) Differentiation

(B) Bolting (C)
Growth (D)
Plasticity

41. A short-day plant was exposed to alternating red-far red treatments. What would happen if the last treatment was of far-red light

- (A) Flowering would occur
- (B) Flowering would not occur
- (C) Plant would etiolate
- (D) Plant would die

42. Which is INCORRECT statement regarding the conditions for growth of plants?

- (A) Nutrients provide raw materials for the synthesis of protoplasm.
- (B) Light is essential for photosynthesis.
- (C) Water is necessary to oxidise the nutrients.
- (D) Minerals are required for the growth of plants.

43. Clinostat is the apparatus used to

- (A) Measure the rate of growth in plant
- (B) Measure the quantity of auxin in plant
- (C) Measure the effect of light on plant
- (D) Eliminate the effect of gravity on plant

44. Sleep movements of leaves in certain plants are or photonasty is due to

- (A) Excess of transpiration
- (B) The leaves getting tired of carrying on photosynthesis
- (C) Decrease in the intensity of light
- (D) Differential growth at the base of leaf

45. What causes a green plant to bend towards light as it grows

- (A) Because green plants need light to carry on photosynthesis .
- (B) Because green plants are phototropic.
- (C) Light stimulates, plant cells on the lighted side to grow faster.
- (D) Auxin accumulates on shaded side stimulating greater cell elongation.

ANSWERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
D	B	A	B	C	B	A	B	C	D	B	A	B	D	C	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
B	D	C	A	D	C	B	B	A	C	D	B	B	A	C	
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	

D	B	B	B	B	B	A	D	D	A	A	C	D	C	D
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SOLUTIONS

21. The sudden elongation of the internodes just prior to flowering in rosette plants is known as bolting.
23. Seeds are treated with Absisic acid (ABA) to remain dormant during storage.
26. Tobacco requires requires a long period of darkness, that is, exposure to light much shorter than that of the critical light period. Hence, it is categorized as 'Short Day Plant' (SDP).
27. Gibberellic acids are used to increase the length of grape stalks.
28. Apical dominance is the phenomena in which the apical bud suppresses the growth of lateral buds into branches.
29. F.W. Went isolated auxin from the tips of the coleoptile of oat seedlings which causes its bending.
30. Cytokinins promote adventitious shoot formation as they help to produce new leaves and chloroplasts in the leaves.

31. GA3 (gibberellic acid) is a hormone that initiates the synthesis of hydrolysis enzymes in the seeds to digest and mobilize reserved foods, leading to the loss of seed lethargy for embryonic development.

34. Spraying juvenile conifers with GA3 hastens their maturity and leads to early seed production.

36. Ethylene is synthesized in large quantities by the tissues of ripening fruits and senescing organs.

37. Abscisic acid is an antitranspirant as it promotes closing of stomata under conditions of water stress. Abscisic acid is called stress hormone as it increases the tolerance of plants to various stresses.

39. Natural cytokinins are synthesised in plants in regions where rapid cell division occurs which includes root apices, shoot buds and young fruits, etc.

40. Differentiation is the process by which embryonic/meristematic cells undergo changes in the structure, shape and chemistry to suit the function they perform.

42. Water is necessary to maintain turgidity of cells and for functioning of enzymes. However, oxygen is necessary for oxidation of the nutrients to release metabolic energy needed for the growth activities. Hence, option C is incorrect statement regarding the conditions for growth of plants.